

	L #	Hits	Search Text
1	L1	14140	((parallel concurrent\$2 two) with (request input thread task) multitask\$3 multithread multi) same cach\$3 cach\$3 same populat\$3 and (bandwidth resource) and integer
2	L2	14037	((parallel concurrent\$2 two) with (request input thread task) multitask\$3 multithread multi) same cach\$3 cach\$3 same populat\$3 and (bandwidth resource) same integer
3	L3	14006	((parallel concurrent\$2 two) with (request input thread task) multitask\$3 multithread multi) same cach\$3 cach\$3 same populat\$3 same (bandwidth resource) same integer
4	L4	1	((parallel concurrent\$2 two) with (request input thread task) multitask\$3 multithread multi) same cach\$3 and cach\$3 same populat\$3 same (bandwidth resource) same integer
5	L5	6	((parallel concurrent\$2 two) with (request input thread task) multitask\$3 multithread multi) same cach\$3 and cach\$3 same populat\$3 and (bandwidth resource) same integer
6	L6	58	((parallel concurrent\$2 two) with (request input thread task) multitask\$3 multithread multi) same cach\$3 and cach\$3 same populat\$3 and (bandwidth resource) and integer
7	L7	2	((parallel concurrent\$2 two) near5 (request input thread task) multitask\$3 multithread multi) same cach\$3 and cach\$3 same populat\$3 and (bandwidth resource) and integer adj3 greater
8	L8	5	((parallel concurrent\$2 two) near5 (request input thread task) multitask\$3 multithread multi) and cach\$3 same populat\$3 and (bandwidth resource) and integer adj3 greater



US006434500B1

(12) **United States Patent**  
**Boehne et al.**

(10) **Patent No.:** **US 6,434,500 B1**  
**(45) Date of Patent:** **Aug. 13, 2002**

(54) **INTERFACE FOR MANAGING TEST DEFINITIONS**

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(73) **Assignee:** **Rosemount Inc., Eden Prairie, MN (US)**

(\*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(52) **U.S. Cl.** ..... **702/120; 345/967**

(58) **Field of Search** ..... **702/57-59, 67, 702/68, 108, 117, 118, 119, 120, 121, 122, 123, 182-185; 700/83, 86, 87; 345/769, 839, 846, 835, 771, 773, 967**

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*Primary Examiner*—John S. Hilten

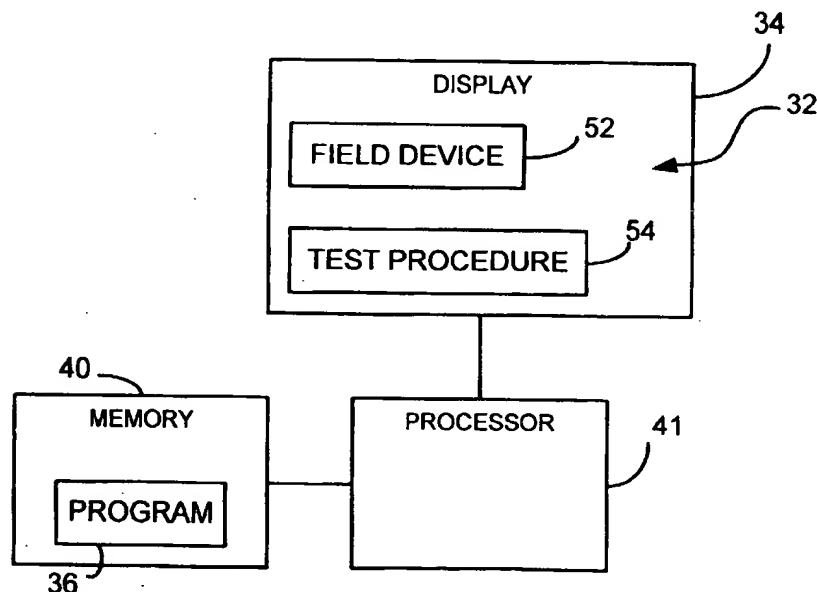
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(74) *Attorney, Agent, or Firm*—Westman, Champlin & Kelly

(57) **ABSTRACT**

A method and apparatus for graphically managing test definitions of a field management system is disclosed. The method and apparatus establish a graphical user interface that is simple to use, efficient, user friendly, and displays test definition related information in an organized manner that can be easily understood by a user. The interface includes a device icon and a test procedure icon presented on a display. The device icon identifies testing data of a field device and the test procedure icon identifies a test procedure that has device testing parameters corresponding to the testing data. A test definition for the field device is created when the device icon and the test procedure icon are associated with each other.

**29 Claims, 8 Drawing Sheets**





US006219829B1

(12) **United States Patent**  
Sivakumar et al.

(10) Patent No.: **US 6,219,829 B1**  
(45) Date of Patent: **Apr. 17, 2001**

(54) **COMPUTER SOFTWARE TESTING MANAGEMENT**

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- (73) Assignee: **Compuware Corporation**, Farmington  
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- (\*) Notice: Subject to any disclaimer, the term of this  
patent is extended or adjusted under 35  
U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/500,047**

(22) Filed: **Feb. 8, 2000**

**Related U.S. Application Data**

- (63) Continuation of application No. 08/838,090, filed on Apr.  
15, 1997, now Pat. No. 6,031,990.
- (51) Int. Cl.<sup>7</sup> ..... **G06F 11/00**
- (52) U.S. Cl. .... **717/4; 717/8**
- (58) Field of Search ..... **717/8, 4**

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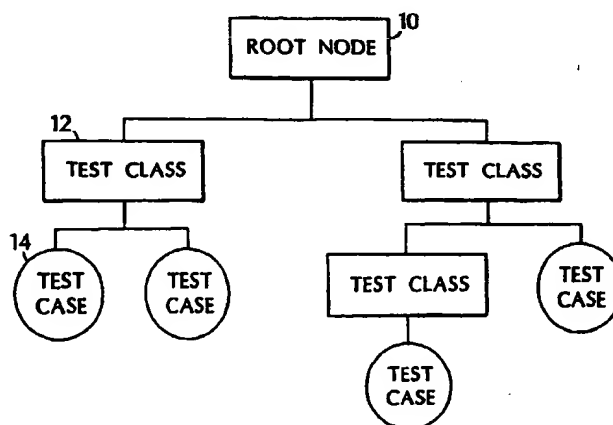
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(74) *Attorney, Agent, or Firm*—Fish & Richardson P.C.

(57) **ABSTRACT**

A test management system is provided having high flexibility of test structuring capabilities, and fine-grained control over how tests are executed. The test management system is extensible; i.e., it can integrate with modern testing tools without requiring a modification of the system itself. More specifically, the test management system uses concepts such as encapsulation and inheritance in order to provide powerful test structuring and test execution capabilities and a framework for integrating with multiple "point tools" that create test cases or help analyze the state of a software program. As is the case with object-oriented software, the test management system is very extensible and new point tools can easily be integrated with the system. The test management system also allows reuse of "rules" specified at different levels in the test structure.

**17 Claims, 8 Drawing Sheets**





US006031990A

**United States Patent** [19]**Sivakumar et al.**[11] **Patent Number:** **6,031,990**[45] **Date of Patent:** **Feb. 29, 2000**[54] **COMPUTER SOFTWARE TESTING  
MANAGEMENT**[75] **Inventors:** Arunachallam Sivakumar, Woburn;  
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Hills, Mich.[21] **Appl. No.:** 08/838,090[22] **Filed:** Apr. 15, 1997[51] **Int. Cl.<sup>7</sup>** ..... G06F 11/00[52] **U.S. Cl.** ..... 395/704[58] **Field of Search** ..... 395/704[56] **References Cited****U.S. PATENT DOCUMENTS**

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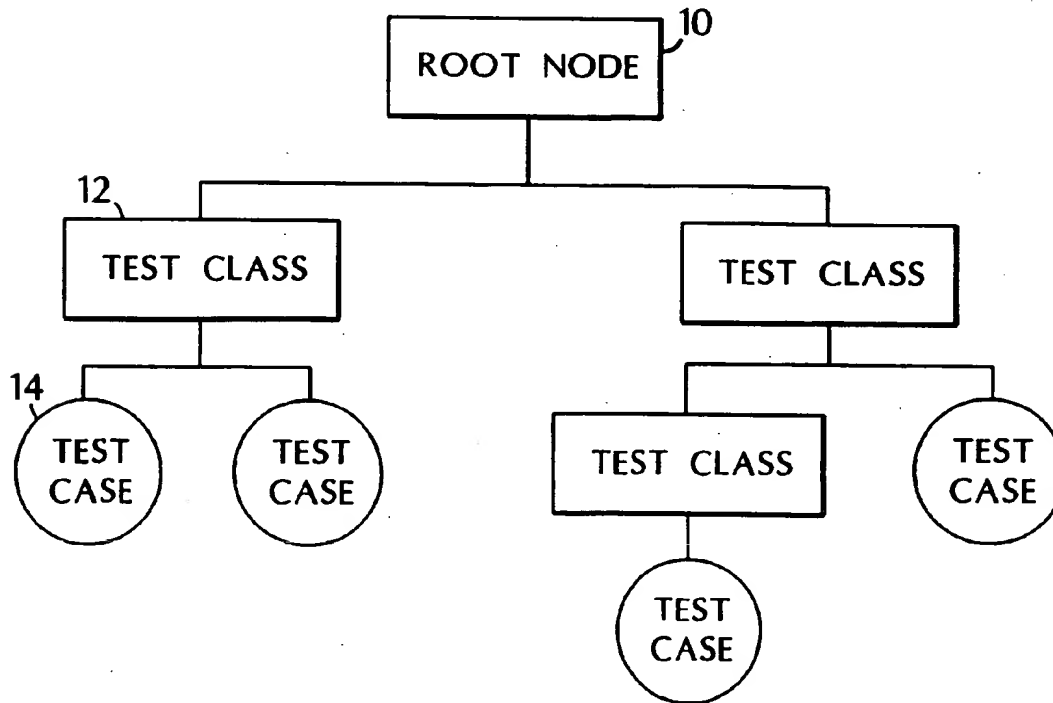
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*Primary Examiner*—Tariq R. Hafiz*Assistant Examiner*—John Q. Chavis*Attorney, Agent, or Firm*—Fish & Richardson PC

[57]

**ABSTRACT**

A test management system is provided having high flexibility of test structuring capabilities, and fine-grained control over how tests are executed. The test management system is extensible; i.e., it can integrate with modern testing tools without requiring a modification of the system itself. More specifically, the test management system uses concepts such as encapsulation and inheritance in order to provide powerful test structuring and test execution capabilities and a framework for integrating with multiple "point tools" that create test cases or help analyze the state of a software program. As is the case with object-oriented software, the test management system is very extensible and new point tools can easily be integrated with the system. The test management system also allows reuse of "rules" specified at different levels in the test structure.

**16 Claims, 8 Drawing Sheets**



US005991537A

# United States Patent [19]

McKeon et al.

[11] Patent Number: 5,991,537  
[45] Date of Patent: Nov. 23, 1999

[54] VXI TEST EXECUTIVE

[75] Inventors: **Brian T. McKeon**; **Mark C. Larson**,  
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[21] Appl. No.: 08/969,530

[22] Filed: Sep. 16, 1997

[51] Int. Cl.<sup>6</sup> ..... G06F 9/45

[52] U.S. Cl. .... 395/704; 395/704; 395/705

[58] Field of Search ..... 395/701, 703,  
395/704, 700, 705; 702/120; 345/349, 333;  
706/47; 714/28

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Primary Examiner—Tariq R. Hafiz

Assistant Examiner—Anil Khatri

Attorney, Agent, or Firm—Michael J. McGowan; Robert W. Gauthier; Prithvi C. Lall

[57] ABSTRACT

A system is provided for developing program test sets with test hardware conforming to well known test industry standards, such as VXI, VME and GPIB standards. The system has a computer with a display console. After initialization and password checks, the console displays a front panel from which a user chooses the instruments, switches, connections, inputs, outputs, etc. which make up the program test set. As each choice is made, the system generates test script corresponding to the choice. The system then uses the test script, or macro, to generate the graphical representation of the component and its connections on the display. The graphical displays are standardized for each functional component or operation of a program test set, as well as being standardized between program test sets. The macros further allow a program test set to be more efficiently developed by coding macros rather than by developing graphical displays. The combined macros for the entire test set provide written documentation for the program test set, allowing for easy configuration management of the program test set.

19 Claims, 2 Drawing Sheets

